Chlorinsitu® business case

Customer	: Arla Foods Nijkerk https://www.arla.nl/
Application	: 2nd water, CIP and milk reception disinfection
Type of installation	: Dulco®Lyse
Capacity	: 200 gram FAC (free available chlorine) per hour
After post expansion	: 300 gram FAC (free available chlorine) per hour
Objective	: Environmentally friendly disinfection
	: Cost savings
	: Product improvement

Arla Foods

Arla Foods, a diary company based in Nijkerk (Netherlands) is founded in 1918 as a cooperative milk producer “De Volharding” later on it became Melkunie and after that Friesland Foods. In 2009 Arla bought the production plant. This Dutch Arla plant is producing specialty products;

- ✔ Milk
- ✔ Buttermilk
- ✔ Yogurt
- ✔ Skyr
- ✔ Drink yogurt
- ✔ Protino
- ✔ Dairy spread cheese
- ✔ Biological butter
- ✔ Kefir
- ✔ Lactose free: milk, yogurt, vanilla yogurt, cream cheese, cottage cheese and crème fraîche

Sales process
The initiative for research of ECA water in dairy was taken by VDH water technology. In the first appointment VDH water technology proposed Arla to joint investigate the possibilities of cost saving, increasing shelf life, increasing safety and multipurpose usage of one technology in several applications. Arla was interested in researching cost saving, increasing shelf life, increasing safety and multipurpose usage of one technology in several applications. Therefore VDH water technology proposed a no cure no pay test of three months. Of course the “goal to be achieved” was set before starting. Agreed was to disinfect the second water (reused water for cleaning and rinsing purposes) in the first stage because for Arla this is a low risk application to switch common practice to new technology.

No cure no pay
During the period of three months the laboratory facilities of Arla has taken samples and shared the outcome with VDH water technology. Due to an NDA agreement VDH water technology is not able to publish the results which were very positive. Due to these results Arla decided to invest in the Dulco®Lyse ECA machine. ECA stands for Electro Chemically Activated water, the friendly pronounciation of on site chlorine production in food and beverage industries. VDH water technology recommended 300 gram per hour capacity in order to be ready for future applications to come. At that moment Arla decided for 200 gram per hour capacity since this was covering the momentary needs amply.

Moving on
After using the Dulco®Lyse for half a year Arla concluded that the technology could be useful in CIP and milk reception as well. Because of this an extra skid with Sigma dosing pumps is installed.

Results:

In the CIP P3 Oxonia was used. An Ecolab recipe of hydrogen peroxide and peracetic acid. After dosing in the CIP tank it had to be warmed up to 70°C to provide proper disinfection. By using the Dulco®Lyte in stead the following savings were achieved;

- ✔ Cost savings on chemicals (P3 Oxonia)
- ✔ Cost savings on CIP heating
- ✔ Time and water savings on product conversions
- ✔ Savings on product waste due to not heating up.

Explanation

✔ Cost savings on chemicals (on site ECA production versus Ecolab P3 Oxonia)
Ecolab's P3 Oxonia costs approx. € 4,20 per kg. For each CIP approx. 1,5 kg required.
Dulco®Lyte costs approx. € 1,20 per kg Cl_2. For each CIP approx. 0,9 kg Cl_2 required.
Per CIP savings € 6,30 - € 1,08 = € 5,22.
Average 4 per day 6 days a week year around; yearly savings approx. € 6.500,-

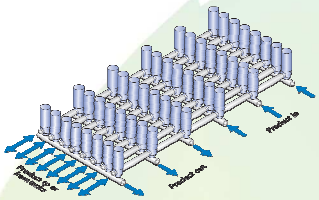
✔ Cost savings on CIP heating
Not heating up 30 m^3 from 18°C to 70°C saves approx. 1.800 kW = 183 m^3 natural gas
Approx. € 0,20 per m^3 natural gas excl. taxes.
Per CIP savings € 0,20 * 183 m^3 = € 36,-.
Average 4 per day 6 days a week year around; yearly savings approx. € 45.000,-

Arla in Nijkerk (Holland) is a specialties factory. This means production of many different products in small batches. Therefore a lot of product conversions take place. Easily 3 to 5 product conversions per day. Savings on tipically UHT (Ultra High Temperature) milk production will be smaller because of CIP frequency 1 or 2 times per day.

✔ Time savings on product conversions approx. 30 min. per conversion
At every conversion also CIP takes place in order to prevent from cross contamination.

For each product conversion in CIP disinfection was at 70°C. This means cooling down piping and valves with cold water rinse for approx. 30 minutes. This step is taken out by using the "cold" Dulco®Lyte. Also skipping the cold water flush saves water.

✔ Savings on product waste due to not heating up.
In the piping and valve arrangement partially CIP takes place. In the other part product is present. Due to hot CIP the product on the other side of valves will be warmed up because of heat conduction. In this case a part of the product is flushed to waste because of contamination risk by temperature increase. By using the "cold" Dulco®Lyte in the CIP the product temperature on the other side is not influenced and thus not wasted anymore.



Total savings caused by switching to Dulco®Lyse ECA water

✔ Chemicals	€	6.500,-
✔ CIP heating	€	45.000,-
✔ Time of product conversions		unknown
✔ Flush water for cooling down during product conversions		unknown
✔ Product waste at product conversions		unknown
Total		**far over € 51.500,-**

Tetra Pak

Arla bought a completely new piping and valve arrangement at Tetra Pak. During the process Tetra Pak was afraid of the chlorine product used in the CIP process. They were specifically concerned about the corrosion caused by chloride content. Therefore VDH water technology had contact with the Projects Director North Europe & Benelux of Tetra Pak processing UK in High Wycombe. After explaining and providing information of the Dulco®Lyse technology Tetra Pak granted warranty for the new valve arrangement at Arla.

VDH water technology scope:

- ✔ Dulco®Lyse 200 g/h FAC
  Including hydrophore and Dulco®Lyte storage tank
- ✔ Dialog chlorine and pH measuring and control system
- ✔ Dosing skid Stainless steel 2 positions incl. 1* ProMinent Sigma 3 S3Ca041030 + accessories for Dulco®Lyte dosing
- ✔ Capacity increase Dulco®Lyse to 300 g/h FAC
- ✔ 2nd * ProMinent Sigma 3 S3Ca041030 + accessories for Dulco®Lyte dosing
- ✔ All-in maintenance contract

Competition:

Only for price comparison Arla sent an enquiry to Danish Clean Water. Price difference is not significant and due to the fact that VDH water technology took initiative to cooperate Arla was not really interested in researching competitors. As a dutch company based in the near area Arla highly preferred doing business with VDH water technology.

Order:

Total lead time from first contact to order	: approx. 12 months
Total order amount approx.	: € 65.000,- net
Yearly All-in maintenance contract	: € 4.750,- net

In case you do have questions or do need support please contact VDH water technology:

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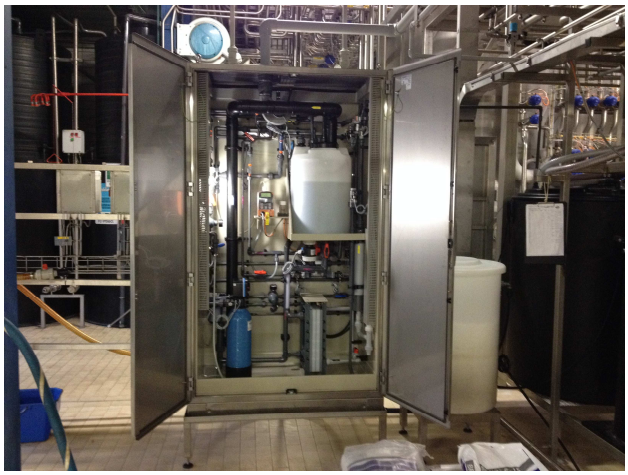
break-unit

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Salpetersuur